

USSR/Microbiology - Microbes Pathogenic for Man and Animals.
Brucellae

F

Abs Jour : Ref Zhur Biol., No 22, 1958, 99437

Author : Kiseleva, V.M., Usmanova, F.I.

Inst : Kazakh Scientific Research Veterinary Institute.

Title : Experimental Isolation of Brucella from the Tissues
and Fluids of the Eye following Extraocular Infection

Orig Pub : T. Kazakhsk. n.-i. vet. in-ta, 1957, 9, 106-109

Abstract : Guinea pigs were injected subcutaneously with 1,000,000,-
000 Brucella of the virulent strain of Brucella melitensis
or were administered percutaneously one drop of a
10,000,000,000 suspension of Brucella of an attenuated
strain of the same type. Rabbits and one sheep were in-
fected intravenously with Brucella of the virulent
strain. The animals were killed following various

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USSR/Microbiology - Microbes Pathogenic for Man and Animals.
Brucellae

F

Abs Jour : Ref Zhur Biol., No 22, 1958, 99437

intervals after the infection: 10 minutes to 3 months. Inoculations were made on a glucose-glycerin broth and agar from various fluids and tissues of the eye of the animals, and also from the lymph nodes, bone marrow, liver, spleen, heart, kidneys and the urine. The cultures were observed for a period of 30 days. The presence of Brucella in the vitreous body, in the fluid of the anterior chamber, and in the iris and retina of the eye, was established with either method of infection following inoculation of these fluids and tissues within a period of up to one month following the infection. No Brucella were found in the ciliary body, in the choroid or in the optic nerve. -- G.Ye. Frumkina

Card 2/2

- 89 -

R/Diseases of Farm Animals. Diseases Caused by
Bacteria and Fungi.

R-1

Abs Jour: Ref Zhur-Biol., No 18, 1958, 83524

Author : Studentsov, K. P., Usmanova, F. I.
Inst : Kazakh Scientific Research Institute of Veterinary
Medicine.

Title : Studying Some Traits of Antibrucella Serum and of
Immunological Reactivity Fluctuations in Hyperimmuni-
zation Processes.

Orig Pub: Tr. Kazakhsk. n.-i. vet. in-ta, 1957, 9, 134-143

Abstract: No abstract is given

Card 1/1

USSR / Microbiology. Microbes Pathogenic for Man and Animals. Bacteria. Brucelli. F-4

Abs Jour: Ref Zhur-Biol., 1958, No 17, 76777.

Author : Studentsov, K. P.; Usmanova, F. I.; Kiseleva, V. M.
Inst : Kazakh Scientific-Research Veterinary Institute.
Title : On the Problem of Serum Therapy of Human Brucellosis.

Orig Pub: Tr. Kazakhsk. n.-i. vet. in-ta, 1957, 9, 150-157.

Abstract: No abstract.

Card 1/1

STUDENTSOV, K.P.; USMANOVA, F.I.

Analysis of the therapeutic properties of the antibrucella
serum produced by the Kazakh Scientific Research Veterinary
Institute. Trudy Inst.kraev.pat.AN Kazakh.SSR 6:130-140
'58. (MIRA 12:6)
(SERUM THERAPY) (BRUCELLOSIS)

KISELEVA, V.M., kand.med.nauk; USMANOVA, F.I., kand.veterin.nauk;
LOPATUKHINA, L.G.

Isolation of brucellosis cultures from the tissues and fluids
of guinea pigs' eyes following extraocular inoculation. Oft.
zhur. 14 no.5:316-320 '59. (MIRA 12:10)

1. Iz kafedry glaznykh bolezney (zav. - zasl.deyatel' nauki,
prof.V.P.Roshchin) Kazakhskogo meditsinskogo instituta, laboratorii
po izucheniyu brutselleza Nauchno-issledovatel'skogo veterinarnogo
instituta Akademii sel'sko-khoz.nauk Kazakhskoy SSR i Sredno-
Aziatskogo protivochumnogo instituta.
(BRUCELLA) (NYE)

KISELEVA, V.M.; LOPATUKHINA, L.G.; USMANOVA, F.I.

Isolation of the brucellosis pathogen from the eyes of guinea
pigs extraocular infection. Zh. mikrobiol. 40 no.7:120-125
Jl'63 (MIRA 17:1)

1. Iz Kazakhskogo meditsinskogo instituta, Sredneaziatskogo pro-
tivochumnogo instituta i Kazakhskogo nauchno-issledovatel'skogo
veterinarnogo instituta.

1. MARTYNOV, D. Ya., USMANOVA, F. K.

2. USSR(600)

4. Comets

7. Observations of the comet Shomass 1951b at the Engel'gardt Astronomical Observatory. Astron. tsir. no. 126, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

KANTYNOV, D. Ya.; USMANOVA, F. A.

Pluto (Planet)

Observations at the Engel'gardt Astronomical Observatory of 1951 comets, Pluto and minor planets in 1951. Astron. Zhir. No. 132, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

MARTYNOV, D.Ya.; USMANOVA, F.K.

Observations of comet 1953a Mrkos-Honda at the Engel'gardt
astronomical Observatory. Astron. tsir. no. 138:1 My '53.

(MLRA 7:1)

1. Astronomicheskaya observatoriya imeni Engel'gardta.

(Comets--1953)

MARTYNOV, D.Ya.; USMANOVA, F.K.

Observations of comets 1951h, 1952a and 1952e at the Engel'gardt
Astronomical Observatory. Astron.tsir. no.139:1-3 Je '53.

(MLRA 7:1)

1. Astronomicheskaya observatoriya imeni Engel'gardta. (Comets)

USMANOVA, F.K.

MARTYNOV, D.Ya.; USMANOVA, F.K.

Observations of Pons-Brooks Comet 1953c and Abel's Comet 1953g at the
Engel'gardt Astronomical Observatory. Astron.tsir. no.144:1-2 D '53.
(MLRA 7:6)

1. Astronomicheskaya Observatoriya imeni Engel'gardta.
(Comets--1953)

MARTYNOV, D.Ya.; USMANOVA, F.K.

Observations of comet 1954 f (Vozarova) at Engel'gardt Astronomical Observatory. Astron. tsir. no. 155:3-4 D '54. (MLR 8:6)

1. Astronomicheskaya observatoriya imeni Engel'gardta.
(Comets--1954)

SEHMAGINA, M.D.; USMANOVA, G.M.

Endemic goiter in Shugurovsk Distric, Tartar A.S.S.R. Probl.endok.
i gorm. 5 no.4:101 J1-Ag '59. (MIRA 13'2)

1. Iz kafedry obshchey gigiyeny (zaveduyushchiy - zasluzhennyy deya-
tel' nauk RSFSR i TASSR prof. V.V. Miloslavskiy) Kazanskogo gosudarst-
vennogo meditsinskogo instituta.
(GOITER statist.)

USMANOVA, G.R.
USMANOVA, G.R. (Kazan')

Complications in the nervous system due to antirabic vaccine. Klin.
med. 35 [1.e.34] no.1 Supplement:41-42 Ja '57. (MIRA 11:2)

1. In nervnogo otdeleniya (rav. - prof. L.I.Omorokov) Respublikanskoy
klinicheskoy bol'nitsy.

(NERVOUS SYSTEM--DISEASES)

(RABIES--PREVENTIVE INOCULATION)

USMANOVA, I.F.; GOLUBEVA, A.V.; VANSHEYDT, A.A.

Synthesis of p-isopropylstyrene and the properties of its polymers
and copolymers with styrene. Khim.nauka i prom. 3 no.6:833-834 '58.
(MIRA 12:2)

1. Nauchno-issledovatel'skiy institut polimerizatsionnykh plastmass.
(Styrene) (Polymerization)

Good
USMANOVA, K. I.: Master Geolog-Mineralo Sci (diss) -- "The lithology of the
~~molasses of Pritashkentskiy Rayon~~
Cainozoic molasses of Pritashkentskiy Rayon". Tashkent, 1958, published by
the Acad Sci Uzbek SSR. 15 pp (Acad Sci Uzbek SSR, Inst of Geology), 175 copies
(KL, No 4, 1959, 123)

USMANOVA, K.I.

Formation of Cenozoic molasses in the Tashkent region. Uzb. geol.
zhur. no.1:27-33 '58. (MIRA 13:2)
(Tashkent region--Rocks, Sedimentary)

USMANOVA, K.I.

Mineralogical and petrological characteristics of Cenozoic molasses
in the Tashkent hilly steppe area. Zap. Uz. Otd. Vses. min. ob-va
no.12:109-113 '58. (MIRA 11:10)
(Tashkent region--Rocks, Sedimentary)

USMANOVA, K.I.

Lithology of Upper Cretaceous sediments in the Dzhaubeumkun
cross section of the Tashkent region. Uzb. geol. zhur. 8 no.1:
49-56 '64. (MIRA 18:5)

1. Institut gidrogeologii i inzhenernoy geologii AN UzSSR.

USMANOVA, M.I.; USMANOV, Kh.U.

Determination of the molecular weight of standard samples of polystyrene by the osmotic method. Uzb.khim.zhur. 7 no.3:64-69 '63.
(MIRA 16:9)

1. Institut khimii polimerov AN UzSSR.
(Styrene polymers) (Molecular weights)

USMANOVA, M.

SPZ 1154 Camelopardalis. Per.zvezdy 13 no.5:378-379 Je '61.
(MIRA 15:8)

1. Institut astrofiziki Tadzhikskoy SSR i Gosudarstvennyy
astronomicheskiy institut im. Shternberga.
(Stars, Variable)

AZIMOV, S.A.; GULYAMOV, U.G.; RAKHIMBAYEV, B.; USMANOVA, M.

Instances of hyperfragments with meson disintegration. Dokl. AN
Uz. SSR no.9:13-18 '57. (MIRA 11:5)

1. Fiziko-tekhnicheskii institut AN UzSSR. Predstavleno akademikom
AN UzSSR U.A. Arifovym.
(Nuclear reactions) (Mesons--Decay)

BANNIK, B.P.; GULYAMOV, U.G.; KOPYLOVA, D.K.; NOMOFILOV, A.A.; PODGORETSKIY,
M.I.; RAKHIMBAYEV, B.G.; USMANOVA, M.

Hyperfragments in nuclear emulsions. Zhur. eksp. i teor. fiz.
34 no.2:286-297 F '58. (MIRA 11:4)

1. Ob"yedinennyy institut yadernykh issledovaniy i Tashkentskiy fiziko-tekhnicheskii institut.
(Mesons) (Cosmic rays)

ACCESSION NR: AT3007256

S/2952/63/000/000/0075/0077

AUTHOR: Usmanova, M.

TITLE: Investigation of the temperature dependence of the resistance of boron

SOURCE: Radiatsion. efekty* v tverd. telakh. Tashkent, Izd-vo AN UzbSSR, 1963, 75-77

TOPIC TAGS: boron, B, electrical resistance, resistance, temperature dependence of resistance, temperature dependence, temperature effect on resistance, polycrystalline B, multicrystal B, monocrystalline B, single-crystal B

ABSTRACT: The paper describes an experimental investigation of the temperature (T) dependence of the resistance (R) of B in cold-pressed and high-T vacuum-refined sintered and crystallized specimens (SP) of amorphous B. The measurements on the 99% pure initially powdered B were performed in a special vacuum instrument (10^{-6} to $2 \cdot 10^{-7}$ mm Hg). High T's were attained either by indirect heating or by means of direct passing of a current through the SP. To avoid contact of the B with any other parts of the equipment at T's at which the B becomes chemically active, the SP's, with only the Ta electrodes attached to their ends, were suspended within a quartz tube 15-mm diam. A Mo spiral served for the indirect heating.

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ACCESSION NR: AT3007256

A pyrometer, and a Pt-PtRh thermocouple served for T control. The SP T was raised to 700°C, at which the R of the B was reduced by 6 orders of magnitude and direct electric heating became possible. T's up to 1,800°, at which complete sintering of the B occurred, were attainable. 35 SP's were used to determine the T dependence of the electrical R of polycrystalline and single-crystal B from 300 to 1,900°K. Spectral analysis confirmed the hypothesis that the slight scatter of R values at low T's was primarily attributable to the presence of impurities. The T dependence of the electrical conductivity of a semiconductor in the region of proper conductivity can be written in the form

$\sigma = \sigma_0 e^{-\frac{A E}{k T}}$ where the activation energy, as obtained from the present experiments for polycrystalline B, is 1.52 ± 0.05 ev. Tests performed with small acicular single crystals showed an even steeper drop in R with T because of an increase in activation energy in the single crystals in which $E_m = 1.63 \pm 0.04$ ev. Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 14Oct63

ENCL: 00

SUB CODE: PH, MA, EL

NO REF SOV: 003

OTHER: 006

Card 2/2

USMANOVA, M.I.; USMANOV, Kh.U.

Determination of the molecular weight of standard samples of polystyrene by the osmotic method. Uzb.khim.zhur. 7 no.3:64-69 '63.
(MIRA 16:9)

1. Institut khimii polimerov AN UzSSR.
(Styrene polymers) (Molecular weights)

AYKHODZHAYEV, B.I.; USMANOVA, M.I.

Density of gutta-percha as dependent on the conditions of its
cross-linking. Khim. i fiz.-khim. prirod. i sint. polim. no.1:
220-225 '62 (MIRA 1821)

USMANOVA, M.I.

Derivation of the velocity function $x = f(t)$ based on the
solution of a balance equation with a Buniatian kernel.

Vop. vych. mat. i tekhn. no.2:165-181 '64.

(MIRA 18:12)

24.7700

33179
S/638/67/001/000/047/056
B116/B138

AUTHOR: Usmanova, M. M.
TITLE: Variation in the electric properties of polycrystalline boron under gamma radiation
SOURCE: Tashkentskaya konferentsiya po mirnomy ispol'zovaniyu atomnoy energii. Tashkent, 1959. Trudy. v. 1. Tashkent, 1961, 281 - 283

TEXT: The author reports on her procedure for sintering boron samples and measuring their conductivity. Boron is a p-type semiconductor with a resistivity of $(1.6 \pm 0.2) \cdot 10^6$ ohm·cm, and behaves very curiously. 94% pure, amorphous boron powder was filled into a special mold, moistened with distilled water, and compacted at 50 atm. Then sintering was performed in vacuo at a maximum temperature of 1200°C. The samples were placed in a quartz tube. Best results were obtained by repeated sintering with the furnace temperature slowly rising to 1200°C in the course of 8 hr, held for 30 - 90 min, and then cooled to room temperature. This was repeated up to five times for each sample. The sample was purified during Card 1/2

X

33119

S/638/61/001/000/047/056
B116/B138

Variation in the electric...

sintering. Measurements were made with two tube megohmmeters and a high sensitivity galvanometer. Various contacts were applied to the surface by spraying, evaporating, and in a paste. The most stable contact was obtained by burning in a silver paste in vacuo at 600°C. Exposure to X-rays and irradiation with a ГУТ-400 (GUT-400) apparatus caused no change in properties. On irradiation with doses of (50-150) · 10⁶ r, most of the samples showed an increase of 8 - 16% in electrical conductivity. This is due to the increase in carrier concentration (increasing number of free holes), or displacement of nuclei. The experiments are being continued by irradiating 99% pure boron with neutrons. There are 1 figure and 2 non-Soviet references. The two references to English-language publications read as follows: Phys. Rev., 107, 2, 419, 1957; J. Sci. Research Inst. Tokyo, 47, 216, 1953.

ASSOCIATION: Fiziko-tekhnicheskii institut AN UzSSR (Physicotechnical Institute AS Uzbekskaya SSR)

Card 2/2

USMANOVA, M. M.

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PHASE I BOOK EXPLOITATION

SOV/6176

Konobeyevskiy, S. T., Corresponding Member, Academy of Sciences
USSR, Resp. Ed.

Deystviye vadernykh izlucheniy na materialy (The Effect of
Nuclear Radiation on Materials). Moscow, Izd-vo AN SSSR,
1962. 383 p. Errata slip inserted. 4000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye tekhnicheskikh nauk; Otdeleniye fiziko-matematicheskikh nauk.

Resp. Ed.: S. T. Konobeyevskiy; Deputy Resp. Ed.: S. A. Adasinskiy; Editorial Board: P. L. Gruzin, G. V. Kurdyumov, B. M. Levitskiy, V. S. Lyashenko (Deceased), Yu. A. Martynyuk, Yu. I. Pokrovskiy, and N. F. Pravdyuk; Ed. of Publishing House: M. G. Makarenko; Tech. Eds: T. V. Polyakova and I. N. Dorokhina.

Card 1/14

The Effect of Nuclear Radiation (Cont.)

90
SOV/6176

PURPOSE: This book is intended for personnel concerned with nuclear materials.

COVERAGE: This is a collection of papers presented at the Moscow Conference on the Effect of Nuclear Radiation on Materials, held December 6-10, 1960. The material reflects certain trends in the work being conducted in the Soviet scientific research organization. Some of the papers are devoted to the experimental study of the effect of neutron irradiation on reactor materials (steel, ferrous alloys, molybdenum, avial, graphite, and nichromes). Others deal with the theory of neutron irradiation effects (physico-chemical transformations, relaxation of internal stresses, internal friction) and changes in the structure and properties of various crystals. Special attention is given to the effect of intense γ -radiation on the electrical, magnetic, and optical properties of metals, dielectrics, and semiconductors.

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The Effect of Nuclear Radiation (Cont.)	SOV/6176
Starodubtsev, S. V., M. M. Usmanova, and V. M. Mikhaelyan. Change in Certain Electrical Properties of Boron and Amorphous Selenium Under the Action of γ -Irradiation	355
Starodubtsev, S. V., and Sh. A. Vakhidov. Luminescence of Crystalline Quartz Subjected to UV- and γ -Rays	362
Starodubtsev, S. V., Sh. A. Ablyayev, and S. Ye. Yermatov. Effect of γ -Ray Flux on Absorption Properties of Vacuum Materials	366
Change in absorptive properties of various silica gels and aluminosilicates, subjected to γ -ray doses of 150,000 to 350,000 r/h, were investigated.	
Linkler, E. I. Effect of γ -Irradiation on Permeability of Some Ferrites	370
Strel'nikov, P. I., A. I. Fedorenko, and A. P. Klyncharev. Effect of Proton Irradiation on Microhardness of Iron and Steel	374
Card 13/14	

L 2439-66 EMP(e)/ENT(m)/ EPF(c)/EWP(i)/ETC/EPF(n)-~~EMP(t)/EMP(b)/ENT(m)~~
IJP(c) REN/JD/GG/GS

ACCESSION NR: AT5023818

UR/0000/62/000/000/0355/0361

AUTHOR: Starodubtsev, S. V.; Usanova, M. M.; Mikhaelyan, V. M.

TITLE: Change in certain electric properties of boron and amorphous selenium under the influence of γ radiation

SOURCE: Soveshchaniye po probleme Deystviye yadernykh izlucheni na materialy. Moscow, 1960. Deystviye yadernykh izlucheni na materialy (The effect of nuclear radiation on materials); doklady soveshchaniya. Moscow, Izd-vo AN SSSR, 1962, 355-361

TOPIC TAGS: boron, selenium, gamma irradiation, irradiation effect, electric conductivity, dielectric loss, internal friction

ABSTRACT: The effect of powerful γ radiation on the electrical conductivity of polycrystalline boron and amorphous (vitreous) selenium and on the stability of this amorphous modification is investigated. A technique was developed for preparing polycrystalline boron samples from its amorphous modification by high-temperature vacuum sintering and refining. A marked increase in the electrical conductivity of polycrystalline boron exposed to the γ rays is noted. Irreversible and pronounced changes in such structurally sensitive parameters as the electrical conductivity, dielectric loss, and internal friction are observed in vitreous

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L 2439-66

ACCESSION NR: AT5023818

selenium following irradiation, probably as a result of the rearrangement of the amorphous modification into a crystalline one. The experimental findings indicate that γ irradiation does not merely induce the excitation of charge carriers and the filling of traps, but also the formation of new defect states responsible for changes in the conductivity. Orig. art. has: 6 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 18Aug62

ENCL: 00

SUB CODE: NP, IC

NO REF SOV: 002

OTHER: 005

Card 2/2 *md*

MOLDAVSKIY, B.L.; prinimali uchastiye : BLINOVA, M.V.; BABEL',
V.G.; BUSIOVICH, Ye.Ya.; RUDAKOVA, R.I.; MELENT'YEVA, T.G.;
USMANOVA, M.Sh.; RUBINSHTEYN, E.I.; ROZENBLIT, N.K.

Production of dicarboxylic acids from hydroxy acids.
Khim.prom 2:112-115 My '60. (MIRA 13:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neft-
yanoy khimii.

(Acids)

5.3400

77560
SOV/80-33-2-35/52

AUTHORS:

Moldavsky, B. L., Blinova, M. V., Batev, V. J.,
Bulovien, Ye. Ya., Usanova, M. Sh.

TITLE:

Production of Dicarboxylic Acids by Oxidation of
"Oxy Acids" With Nitric Acid. Communication III

FUNDING:

Zhurnal prikladnoy khimii, 1980, Vol 33, No 2, pp
463-467 (USSR)

ABSTRACT:

The oxidation of paraffins with nitric acid can yield, depending on the reaction conditions, a series of oxygen-containing compounds such as alcohols, aliphatic acids, esters, as well as products of further oxidation of the aliphatic acids (hydroxy-, aldehyde-, and keto-acids and their derivatives). Aliphatic acids, which are paraffins, alcohols, aldehydes, and ketones, are the starting materials in the synthesis of dicarboxylic acids. The products of further oxidation of petroleum ether, the products of further oxidation of aliphatic acids are insoluble in petroleum ether and

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can be easily separated. This insoluble fraction is called usually "oxy acids" (oxidolites) in USSR, and it can be used for the synthesis of dicarboxylic acids. U. Rajot and P. Goussat reported (Bull. Soc. Chim., 1952, Vol 172) the auto-oxidation of saturated aliphatic acids with an even number of carbon atoms (C_6 to C_{18}) effected at 100-120° C. in the presence of nickel perchlorate. The above authors established that the oxidation of the chain took place chiefly in the β -position; the reaction yielded a monomeric acid with a lower molecular weight (oxidolite) and an even number of carbon atoms, and oxalic acid. The oxidolite was a mixture of aliphatic acids, which were easily separated from each other by extraction with petroleum ether. The conditions of the reaction (temperature, concentration of the reagents, and duration of the reaction) were investigated. The authors only dealt with the formation of oxidolite and oxalic acid. The authors of the present study do not agree with the above. The starting material for their investigation was a mixture of paraffins obtained from the urea deparaffination of diesel oils. This mixture was oxidized with air at 130° and gave a product consisting of 5% "oxy acids", 20% aliphatic acids, and 20% paraffins and neutral oxygen-containing compounds. The above starting material was oxidized easily with 57% nitric acid at 70-80° C and yielded chiefly pinelic, adipic, glutaric, and succinic acids. In 60% yield, based on the mixture "oxy acids", these aliphatic acids, distilled together with nitric acid, succinic or acetic acid (60%), propionic acid (40%), butyric acid (10%), and valeric acid (10%). Oxalic acid, 3% based on the mixture "oxy acids", was obtained. U. Rajot and P. Goussat reported (Bull. Soc. Chim., 1952, Vol 172) the auto-oxidation of saturated aliphatic acids with an even number of carbon atoms (C_6 to C_{18}) effected at 100-120° C. in the presence of nickel perchlorate. The above authors established that the oxidation of the chain took place chiefly in the β -position; the reaction yielded a monomeric acid with a lower molecular weight (oxidolite) and an even number of carbon atoms, and oxalic acid. The oxidolite was a mixture of aliphatic acids, which were easily separated from each other by extraction with petroleum ether. The conditions of the reaction (temperature, concentration of the reagents, and duration of the reaction) were investigated. The authors only dealt with the formation of oxidolite and oxalic acid.

Card 2/4

oxalic acid. The authors of the present study do not agree with the above. The starting material for their investigation was a mixture of paraffins obtained from the urea deparaffination of diesel oils. This mixture was oxidized with air at 130° and gave a product consisting of 5% "oxy acids", 20% aliphatic acids, and 20% paraffins and neutral oxygen-containing compounds. The above starting material was oxidized easily with 57% nitric acid at 70-80° C and yielded chiefly pinelic, adipic, glutaric, and succinic acids. In 60% yield, based on the mixture "oxy acids", these aliphatic acids, distilled together with nitric acid, succinic or acetic acid (60%), propionic acid (40%), butyric acid (10%), and valeric acid (10%). Oxalic acid, 3% based on the mixture "oxy acids", was obtained. U. Rajot and P. Goussat reported (Bull. Soc. Chim., 1952, Vol 172) the auto-oxidation of saturated aliphatic acids with an even number of carbon atoms (C_6 to C_{18}) effected at 100-120° C. in the presence of nickel perchlorate. The above authors established that the oxidation of the chain took place chiefly in the β -position; the reaction yielded a monomeric acid with a lower molecular weight (oxidolite) and an even number of carbon atoms, and oxalic acid. The oxidolite was a mixture of aliphatic acids, which were easily separated from each other by extraction with petroleum ether. The conditions of the reaction (temperature, concentration of the reagents, and duration of the reaction) were investigated. The authors only dealt with the formation of oxidolite and oxalic acid.

Card 3/4

ABSTRACTING:

All-Union Scientific Research Institute for Nitrochemicals
Institute for Chemistry of Macromolecules
Institute for Nitrochemicals (Moscow)

SUBMITTED:

March 1980

USMANOVA, N.F.

30-58-4-31/44

AUTHOR: None Given

TITLE: Dissertations (Dissertatsii).
Branch of Chemical Sciences (Otdeleniye khimicheskikh nauk).
July-December 1957 (Iyul'-Dekabr' 1957)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, Nr 4,
pp. 116-117 (USSR)

ABSTRACT: At the Institute for Compounds of High Molecular Weight.
(Institut vysokomolekulyarnykh soedineniy) the following
dissertation for the degree of a Candidate of Technical
Sciences was defended:
N. F. Usmanova - Investigations in the Field of the
Synthesis and of the Polymerization of α - and β -Vinyl-
naphthalene. (Issledovaniya v oblasti sinteza i poli-
merizatsii α - i β -vinilnaftalina).
2) At the Institute for General and Inorganic Chemistry
imeni M. S. Kurnakov (Institut obshchey i neorganicheskoy
khimii imeni N. S. Kurnakova), the following dissertations
were defended:

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.Dissertations. Branch of Chemical Sciences.
July-December 1957

30-58-4-31/44

a) for the degree of a Candidate of Chemical Sciences:
V. T. Alaksanyan - Absorption Spectrum of Some Compounds
of Quadrivalent Uranium at Low Temperature. (spektry
pogloshcheniya nekotorykh soyedineniy chetyrehvalentnogo
urana pri nizkoy temperature).

Ya. Ya. Bleydelis - Crystallochemical Investigation of the
Diamirodithioegate of Bivalent Platinum. (Kristallokhimi-
cheskoye issledovaniye diamindirodanidov dvukhvalentnoy
platiny).

T. A. Dobrynina - Physico-Chemical Investigation of the
Triple System $\text{LiOH-H}_2\text{O}_2\text{-H}_2\text{O}$ and Synthesis of Peroxidic
Lithium Compounds. (Fiziko-khimicheskoye issledovaniye
troynoy sistemy $\text{LiOH-H}_2\text{O}_2\text{-H}_2\text{O}$ i sintez perekisnykh
soyedineniy litiya).

A. K. Il'yasova - Investigation of the Effect of Pyridine
on Isomeric Ammonia-Bromine Compounds and on Nitrobromine
Compounds of Quadrivalent Platinum. (Izucheniye deystviya
piridina na izomernyye ammiachnyye bromo- i nitrobromosoye-
dineniya chetyrehvalentnoy platiny).

Card 2/5

Dissertations. Branch of Chemical Sciences.
July-December 1957

30-58 -4-31/44

D. L. Motov - Investigation of the $\text{TiO}_2\text{-H}_2\text{SO}_4\text{-(NH}_4)_2\text{SO}_4\text{-H}_2\text{O}$ System in Connection With the Working Up of Titanium Niobates of the Kola Peninsula (Izucheniye sistemy $\text{TiO}_2\text{-H}_2\text{SO}_4\text{-(NH}_4)_2\text{SO}_4\text{-H}_2\text{O}$ v svyazi s problemoy pererabotki titanoniobatov Kol'skogo poluostrova).

3) At the Institute for Organic Chemistry imeni N. D. Zelinskiy (Institut organicheskoy khimii imeni N. D. Zelinskogo) the following dissertations for the degree of a Candidate of Chemical Sciences were defended:

I. F. Bel'skiy - Catalytic Hydrogenolysis of Furane Homologs (Kataliticheskiy gidrogenoliz gomologov furana).
K. N. Kurdyumova - Structure and Chemical Transformations of Organo-Alkaline Anil Compounds. (Stroyeniye i khimicheskiye prevrashcheniya shchelochnoorganicheskikh soyedineniy anilov).

N. V. Nikiforova - Investigations of the Kinetics and of the Sequence of the Hydrogenation of Couplings in the Functional Series of Some Hyperoxidic Compounds.

Card 3/5

Dissertations. Branch of Chemical Sciences.
July-December 1957

30-58-4-31/44

(Issledovaniya kinetiki i posledovatel'nosti gidrirovaniya svyazey v funktsional'nykh gruppakh nekotorykh perekisnykh soyedineniy).

B. D. Polkovnikov - Catalytic Hydrogenation of Cyclic Hydrocarbons With the System of Linked Double Compounds.

(Katalicheskoye gidrirovaniye tsiklicheskikh uglevodorodov s sistemoy sopryazhennykh dvoynykh svyazey).

4) At the Institute for Physico-Chemistry (Institut fizicheskoy khimii) the following dissertations were defended:

a) for the degree of a Candidate of Chemical Sciences:

O. Abrarov - Determination of the Discharge Velocity of Nickel Ions and of Cobalt Ions. (Issledovaniye skorosti razryada ionov nikelya i kobal'ta).

A. I. Lipin - Investigation of the Precipitation Process of Electrolytic Coatings on Aluminum Alloys. (Issledovaniye protsessa oszazhdeniya elektroliticheskikh pokrytiy na alyuminiyevyye splavy).

b) for the degree of a Candidate of Physico-Mathematical Sciences: B. N. Vasil'yev - On the Properties of Substance in the State of Absorption According to the Data Obtained

Card 4/5

Dissertations. Branch of Chemical Sciences.
July-December 1957

30-58-4-3"/44

in the Investigation of the Absorption of Carbon Dioxide
in a Wide Range of Temperatures and Pressures. (O svoyst-
vakh veshchestva v adsorbirovannom sostoyanii po dannym
issledovaniya adsorbtsii dvuokisi ugleroda v shirokom
intervale temperatur i davleniy).

S. S. Dukhin - Theory of Diffusion Powers of Remote
Effect in Aerosols. (Teoriya sil diffuzionnogo dal'-
nodeystviya v aerolyakh).

1. Chemistry—Bibliography 2. Bibliography—Chemistry

Card 5/5

SOV/63-3-6-35/43

AUTHORS: Usmanova, N.F., Golubeva, A.V., Vansheydt, A.A.

TITLE: The Synthesis of Paraisopropylstyrene and the Properties of Its Polymers and Copolymers With Styrene (O sinteze paraizopropilstircła i svoystvakh yego polimerov i sopolimerov so stirolom)

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1956, Vol III, Nr 6, pp 833-834 (USSR)

ABSTRACT: Simultaneous polymerization of styrene with paraisopropylstyrene was used for the production of polystyrenes with various contents of paraisopropyl groups in the aromatic nuclei. Polymers of isopropylstyrene were produced by the block and emulsion methods. Copolymerization of paraisopropylstyrene with styrene was carried out by the block method using 5 different relations of the monomers in the initial mixtures. The properties of the produced polymers and copolymers are shown in a table.

Card 1/2 There is 1 table and 5 references, 1 of which is Soviet, 3 English, and 1 German.

SOV/63-3-6-35/43

The Synthesis of Paraisopropylstyrene and the Properties of Its Polymers and Copolymers With Styrene

ASSOCIATION: Nauchno-issledovatel'skiy institut polimerizatsionnykh plast-
mass (Scientific Research Institute of Polymer Plastics)

SUBMITTED: April 7, 1958

Card 2/2

2867/ADS

International symposium on macromolecular chemistry, Moscow, 1960.

Rezhimnaya stipendiya po matematicheskoy fizike SSSR, (Moscow, 1-15 Iyunya 1960 g.) dodel'nyy atestifikat, Seriya 1, (International Symposium on Macromolecular Chemistry Held in Moscow, June 1-15, 1960; Papers and Summaries. Section I.) [Moscow, Izdat. AN SSSR, 1960] 346 p., 1,500 copies printed.

Sponsoring Agency: The International Union of Pure and Applied Chemistry,
Commission on Macromolecular Chemistry

Техн. Ed.: Т. Т. Полякова.

NOTE: This collection of articles is intended for chemists and researchers interested in macromolecular chemistry.

CYBULET. This is Section I of a multivolume work containing scientific papers on macromolecular chemistry in Moscow. The material includes data on the synthesis and properties of polymers, and on the processes of polymerization, copolymerization, polycondensation, and polydecomposition. Each part is presented in full or summarized in French, English, and Russian. There are 47 papers, 26 of which were presented by Soviet, Eastman European, and Czechoslovakian scientists. By personal files are mentioned. References accompany individual articles.

Corvelin, A. E.; Yu. I. Furman, D. T. Korytenko, N. A. Pankhova, and
N. B. Rosova (USSR). Polycondensation of the α -Amino Acids Esters in
the Presence of Carbon Dioxide

SAUER, J. A. (Hungary). On the Behavior of Mixed Purfural-Formaldehyde Resinoid Plastics. 218

Alitina, K. S., and L. A. Kodivajala (USSR). On the Heterogeneous Method of the Polycondensation 228

Chakrabarti, N. V., V. L. Narasimha, and S. S. Nitholayra (ISSI). On Some Reactions Underlying the Interfacial Polycondensation of Acid Chlorides of Dicarboxylic Acids and Diamines in the Process of Fibre Formation

Alammar, L., and L. Dacosta (Buenos Aires). Synthesis of Polyureide by Interfacial Polycondensation. 245

ESSENCHKOVA, A. A., U. A. LEVORICH, and I. A. PRINIA (USSR). The Catalytic Action of Some Palladium Compounds on the Formation of Polyurethanes.

Lebel, F., and R. Chroševák (Czechoslovakia). Some Problems of Polycondensation in a Suspension

COLOMBINI, L. P., GELANDOV, and A. A. VASHERDIT (USSR). Copolymers of α -Methylstyrene and Vinyl Naphthalene With Other Vinyl Compounds 2632

USE POLYMERIZATION OF VINYL CHLORIDE
CUMULATIVE REACTIONS IN

Polymerization of p-Chlorostyrene in the Presence of Dispersion Solution With a Linear Density Gradient

Acting of Polythiopyrene
and 18. POLYMER (SECUNOSILOXANE). DETAIL

Card 9/9

Approved for Release _____

Kotom, N. M., I. N. Kiseleva, and P. S. Florinsky (USSR). The Effect of Chemical Structure on the Polymerization Activity of the Unactivated

Volkenshteyn, M. V. (USSR). Cooperative Processes in the Polycondensation of Biopolymers

cat 69

S/191/60/000/000/001/014
B004/B056

AUTHORS: Golubeva, A. V., Neymark, O. M. (Deceased), Usmanova, N.F.,
Sivograkova, K. A., Bezborodko, G. L., Meyerzon, A. A.

TITLE: Synthesis of Acenaphthylene, Its Polymers, and Its Copoly-
mers With Other Monomers

PERIODICAL: Plasticheskiye massy, 1960, No. 8, pp. 3-6

TEXT: In the introduction, the authors give a survey of published data on the synthesis, polymerization, and copolymerization of acenaphthylene which, with the exception of a paper by V. S. Titov (Ref. 2), is based upon western papers. The authors then give a report on their experiments. The synthesis proceeded from commercial acenaphthene of the type ЧМТУ No. 4850-54 (ChMTU No. 4850-54), and took place in the vaporous phase. As catalysts, styrene contact was used as well as the usual catalyst used for the dehydrogenation of butane. For the purpose of analyzing the reaction products, a new method developed by V. A. Balandina and Z. F. Davydova was employed: Iodination of the double bond in the presence of mercurous chloride and HCl in an alcoholic medium. This method gave the same results

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Synthesis of Acenaphthylene, Its Polymers,
and Its Copolymers With Other Monomers


S/191/60/000/008/001/014
B004/B056

as hydrogenation on palladium and platinum black according to G. L. Bezborodko. A maximum of concentration (up to 98.5%) and yield (up to 88%) was obtained between 640° and 650°C (Fig. 1). Fig. 2 gives the concentration of acenaphthylene as a function of the feeding rate of acenaphthene in g/l catalyst. At 125 g/l the concentration was 90%. Only a feeding rate from 320 to 330 g/l is considered to be profitable. An addition of water vapor offered no advantages. The block polymerization of acenaphthylene was carried out in the presence of benzoyl peroxide, the emulsion polymerization in the presence of potassium persulfate and sulfanol. Polymers with molecular weights of 119,000 and 160,000 were obtained, which, however, could not be processed because of their brittleness. The copolymerization of acenaphthylene with styrene was carried out under the same conditions as the polymerization. The acenaphthylene content was varied between 10 and 50%. The physical, mechanical, and electrical properties are given in Table 1. Fig. 3 shows that the thermal stability of the copolymer increased with an increasing content of acenaphthylene. In Fig. 4, the molecular weight and the intrinsic viscosity of the copolymer are represented as a function of the acenaphthylene content. The copolymer with a ratio between acenaphthylene : styrene = 20 : 80, which could be processed by pressing and casting under pressure was found to have Card 2/3

Synthesis of Acenaphthylene, Its Polymers,
and Its Copolymers With Other Monomers

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B004/B056

the best properties. Table 2 gives a comparison between the thermomechanical and electrical properties of the copolymer and those of the polystyrene. The dielectric properties are as good as those of polystyrene, and its thermal stability is higher by about 30°C. There are 4 figures, 2 tables, and 24 references: 2 Soviet, 9 US, 6 British, and 7 German.



Card 3/3

87643

S/191/60/000, J12/002/016
B020/B066

11.2210 also 2209

AUTHORS: Golubeva, A. V., Usmanova, N. F., Sivograkova, K. A.

TITLE: Copolymers of α -Methyl Styrene

PERIODICAL: Plasticheskiye massy, 1960, No. 12, pp. 4 - 6

TEXT: The present paper studies the possibility of copolymerizing α -methyl styrene with other polar and nonpolar vinyl compounds according to a radical mechanism. The properties of the copolymers obtained were investigated. For the copolymerization with α -methyl styrene, styrene, 2,5-dichloro styrene, methyl methacrylate, and acrylonitrile were used. Copolymerization was carried out by means of the emulsion method in the presence of an initiator (potassium persulfate) and of an emulsifier (Sulfanole). The monomer concentration ranged between 99.5 and 99.8%, the ratio of the hydrocarbon phase to the aqueous phase varied between 1:3 and 1:5, the pH of the medium was 7.8 - 8. The reaction was carried out in the stream of an inert gas (nitrogen) at 75 - 80°C. The composition of α -methyl styrene - styrene copolymers was determined by means of the infrared spectroscopic method devised by T. A. Speranskaya, that of the

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Copolymers of α -Methyl Styrene

S/191/60/000/012/002/016
B020/B066

remaining copolymers chemically. When increasing the α -methyl styrene content in the initial monomer mixture, copolymerization is retarded, and the finite conversion degree drops (Fig.1). In this connection, also the intrinsic viscosity of copolymers decreases (Fig.2). The heat resistance of copolymers drops with increasing α -methyl styrene content (Fig.3). In the copolymerization of three monomers - α -methyl styrene, methyl methacrylate and acrylonitrile - in the ratio of 35.70:50.65:13.65 mole%, the heat resistance increases considerably as compared with that of the ternary MCH(MSN) copolymer which contains styrene instead of α -methyl styrene. The copolymers of α -methyl styrene with styrene or methyl methacrylate (ratio 1:2.5 moles) exhibited satisfactory mechanical properties and higher heat resistance than polystyrene and polymethyl methacrylate. The dielectric properties were similar to those of polystyrene. The authors also studied the conditions of copolymerization of α -methyl styrene with styrene, methyl methacrylate and acrylonitrile by the suspension method. Polyvinyl alcohol and Solvar (partly acetylated polyvinyl alcohol) were used as stabilizers for the suspension in quantities of 0.1 - 1%, and benzoyl peroxide, diisobutyric acid azodinitrile and benzoyl peroxide mixed with tert.-butyl peroxide (in a

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Copolymers of α -Methyl StyreneS/191/60/000/012/002/016
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ratio of 1:1) in quantities of 0.5 - 1% as initiators. The experiments were carried out in the stream of an inert gas at 70 - 90°C. Under these conditions, copolymerization of α -methyl styrene with styrene, as well as with acrylonitrile, proceeded slowly. Previously, a bulk polymerization of the monomers had to be carried out at 80°C up to a conversion of 35%, and a suspension polymerization of the pre-polymer obtained. Even when using this combined block-suspension polymerization, the degree of conversion of the monomers was only 96 - 97%. The dimensional stability under heat of the copolymers according to Vicat was only 115°C, and they were very brittle. Nor was the above stability of the ternary copolymers obtained under the same conditions any higher. The bulk copolymerization of α -methyl styrene with styrene, acrylonitrile and methyl methacrylate at different ratios of the monomers (from 0.25 to 1 mole of α -methyl styrene in the initial monomer mixture), with benzoyl peroxide, diisobutyric acid azo-dinitrile and cobalt naphthenate, possibly with a mixture of benzoyl peroxide with tert.-butyl peroxide (at a ratio of 1:1) as initiators, at 70 - 200°C for 200 hours in glass ampuls which had been previously deaerated, yielded hard, transparent, colorless or - in the case of copolymerization with acrylonitrile - yellow polymers with a heat

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8764³.

Copolymers of α -Methyl Styrene

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resistance according to Vicat of about 120°C. There are 3 figures,
1 table, and 7 references: 1 Soviet, 4 US, 1 Canadian, and 1 British.

X

Card 4/4

89341

S/191/61/000/001/001/015
B101/B205

15.8104

AUTHORS: Golubeva, A. V., Nosayev, G. A., Usmanova, N. F.,
Yeremina, Ye. N., Sivograkova, K. A.

TITLE: A suspension method for obtaining high-molecular polystyrene

PERIODICAL: Plasticheskiye massy, no. 1, 1961, 3-7

TEXT: In view of the great commercial advantages of suspension polymerization, the authors studied the most favorable conditions for obtaining high-molecular polystyrene with good physical, mechanical, and dielectric properties. In doing so, they applied the method of suspension polymerization. A study has been made of the influence of initiators and their mixtures, as well as of stabilizers and reaction temperature. The various initiators were synthesized by alkylation or acylation of H_2O_2 or Na_2O_2 . ix

First, polymerization was done in a nitrogen atmosphere at 20-95°C with a monomer-to-water ratio of 1:3 or 1:6, and with 0.5-2% initiator referred to styrene. The authors aimed at obtaining a granulated polymer. Results are summarized in Table 1:

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A suspension method for...

Initiator	polymerization temperature °C	time, hr	form of product	molecu- lar weight
tert-butyl hydroperoxide	80;90	12-18	emulsion	55,000
cyclohexanone peroxide	80;90	10;16	flocks	
tert-butyl peroxide	90	12-18	emulsion	
acetone peroxide	80	18	emulsion	55,000
methyl-ethyl ketone peroxide	80	2-24	powder	
dimethyl peroxy-dicarbonate	20-90	2-24	emulsion	
tert-butyl perbenzoate	90	8-10	granules	110,000
tert-butyl peracetate	90	12	granules	108,000
tert-butyl permethacrylate	90	12	flocks	48,000
caprylyl peroxide	70-90	8;7	granules	
lauryl peroxide	70	9	granules	
methacrylyl peroxide	90	6;14	emulsion	40,000
acetyl peroxide	90	6;12	powder	
p-chlorobenzoyl peroxide	90	7	granules	
cinnamoyl peroxide	90	8	trimer	35,000
peracetic acid	90	8	emulsion	
benzoyl peroxide	90	8	granules	
azoisobutyric acid dinitrile	90	7	granules	57,000

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A suspension method for...

The effect of various compositions of the initiators at 90°C in nitrogen, with Solvar serving as a stabilizer, is illustrated in Table 2:
Composition of initiators

Composition of initiators I	ratio	polymerization time, hr	form	molecular weight
benzoyl peroxide + isopropyl acetone peroxide	1:1	7	granules	33,500
benzoyl peroxide + cinnamoyl per- oxide	4:1	3	granules	insoluble
benzoyl peroxide + di-tert-butyl perterephthalate	1:1	10	granules	41,000
benzoyl peroxide + tert-butyl perbenzoate	1:10	10	granules	84,700
benzoyl peroxide + propane di- tert-butyl peroxide	1:1	6	granules	53,800
tert-butyl peroxide + benzoyl peroxide	1:1	12	granules	90,000
tert-butyl peroxide + propane di- tert-butyl peroxide	1:1	12	emulsion	
tert-butyl peroxide + cinnamoyl peroxide	4:1	12	emulsion	

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A suspension method for...

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Continuation of Table 2:

tert-butyl perbenzoate + lauryl peroxide	1:1	8	granules	86,700
tert-butyl perbenzoate + cinnamoyl peroxide	24:1	8	powder	116,000
tert-butyl perbenzoate + lauryl peroxide	4:1	7	granules	132,000
tert-butyl perbenzoate + tert-butyl peroxide	4:1	9	granules	80,900
tert-butyl perbenzoate + propane-di-tert-butyl peroxide	1:1	7	granules	91,900
tert-butyl perbenzoate + dimethyl peroxy-dicarbonate	1:1	12	emulsion	
tert-butyl perbenzoate + caprylyl peroxide	4:1	8	granules	90,000
tert-butyl hydroperoxide + propane-di-tert-butyl peroxide	1:1	12	emulsion	

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A suspension method for...

Experiments with benzoyl peroxide (I), tert-butyl peroxide (II), and tert-butyl perbenzoate (III) were made in autoclaves (50,200,600 l capacity), using Solvar as a stabilizer (partly saponified polyvinyl acetate with 12-13% acetate groups). Monomer-to-water ratio = 1:2; temperatures: 80-95°C or 80-130°C. These experiments confirmed the results of laboratory tests. Granulated polystyrenes with a molecular weight of 100,000-120,000 were obtained. At 130°C the reaction took place within 9-10 hr, the polymer containing only 0.3% of the initial monomer. A comparison between these styrenes and those obtained by block polymerization is presented in Table 3:

Property	suspension polystyrene obtained with:			block polystyrene
	0.5% I	0.3% I + II	1.5% III	
molecular weight	35,000	90,000-100,000	110,000-120,000	90,000
thermal stability according to Vicat	99	98	100	96.5
according to Martens	79	79	80	76
resilience, kg·cm/cm ²	12	22	18	18
bending strength, kg/cm ²	750	1050	950	1,100
tan δ at 10 ⁶ cps	0.0003	0.0003	0.0005	0.0003
ε at 10 ⁶ cps	2.5	2.5	2.5	2.5

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A suspension method for...

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Suspension polymerization of styrene in the presence of polystyrene was studied in addition. Ordinary styrene and styrene thermally polymerized up to 30% were further polymerized in an aqueous suspension. Using I and II in a ratio of 1:1 as initiators, a polystyrene with a molecular weight of 140,000 was obtained. Polyvinyl alcohol, Solvar, sodium polymethacrylate, copolymer from methyl methacrylate and methacrylic acid, gelatine, $\text{Ca}_3(\text{PO}_4)_2$, $\text{Mg}(\text{OH})_2$, talc, etc. were tested for stabilization. 0.5% copolymer from methyl methacrylate and methacrylic acid, or 0.1% Solvar were found to be the most favorable stabilizers. The polystyrene fraction with a particle size of 0.5-0.1 mm amounted to 60-80% of the total amount of the polymer. There are 3 tables and 10 references: 2 Soviet-bloc and 8 non-Soviet-bloc. ✓

Card 6/6

USMANOVA, N.F.; GOLUBEVA, A.V.; VANSHEYDT, A.A.; YEREMINA, Ye.N.

Synthesis and properties of polymers and copolymers of α and β -vinylnaphthalenes. Report 1: Synthesis of monovinylnaphthalenes.
Plast.massy no.3:3-6 '61. (MIRA 14:3)
(Naphthalene)

21141

S/191/61/000/004/002/009
B110/B208

158104

2209, 1372

AUTHORS: Usmanova, N. F., Golubeva, A. V., Vansheydt, A. A.,
Sivograkova, K. A.

TITLE: Synthesis and properties of α - and β -vinyl naphthalenes.
Report II. Polymers of vinyl naphthalenes and their
copolymers with styrene

PERIODICAL: Plasticheskiye massy, no. 4, 1961, 6-8

TEXT: Polymerization of monovinyl naphthalenes, and the properties of
polymers that are more resistant to heat than polystyrene are as yet little
known. P. P. Shorygin, I. V. Shorygina, Yu. S. Zal'kind, and S. A. Zonis
found that α -vinyl naphthalene forms transparent, brittle polymers softening
at 100-110°C with a molecular weight of approximately 5000. The poly- α -
vinyl naphthalene obtained by S. Loshaek was also brittle and low-molecular.
The α -vinyl naphthalene copolymerized by M. M. Koton with styrene and
acrylic esters had also a low mechanical strength. The copolymers of
 β -vinyl naphthalene with styrene, methyl methacrylate, and methyl acrylate,
studied by C. C. Price et al., had molecular weights of 10000-40000. The

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Synthesis and properties of...

authors had previously shown (Ref. 9: N. F. Ustanova et al. Plast massy no. 3 (1961)) that α - and β -vinyl naphthalenes may be prepared separately in good yields and simply from naphthalene. α - and β -vinyl naphthalenes (99.6-99.8 %) were polymerized by the block (I) and emulsion methods (II). In the case of (I), polymerization was performed in the presence of 0.5 % benzoyl peroxide for 100 hr in vacuo at temperatures gradually increasing from 60 to 130°C up to 98 % conversion. The polymers obtained in a yield of 97 % were reprecipitated from methanol dissolved in benzene in order to remove the monomers. In the case of (II), polymerization was carried out in the presence of potassium persulfate and sodium oleate in an N₂ atmosphere. The polymer was coagulated with 1 % formic acid and separated in the form of powder with a yield of 97-99 %. The α - and β -polymers thus prepared softened at 160°C, then formed a solid, transparent mass, and dissolved completely in benzene, toluene, and dichloro-ethane. The α -polymer, above all, is brittler than polystyrene, owing to a greater rigidity of its chains. To increase the mechanical strength, styrene links are to be incorporated into the molecule by copolymerization. This was also accomplished by block and emulsion polymerizations at different ratios of the monomers (10-90 %). Intrinsic viscosity, average molecular

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Synthesis and properties of...

weight, softening point, specific impact strength, and dielectric properties ($\tan \delta$ and ϵ at 10⁶ cps and 20°C) were determined. ϵ had a constant value of 2.6, and $\tan \delta$ increased with increasing naphthalene content from $2 \cdot 10^{-4}$ to $5 \cdot 10^{-4}$. Intrinsic viscosity and molecular weight of the copolymer of α -vinyl naphthalene (Figs. 1 and 2) decreased fivefold by substituting naphthalene links for 40 % of the benzene links. In the β -compound, the decrease takes place more slowly, as its copolymers are high-molecular. The molecular weight of β -vinyl naphthalene copolymers with 40 (I) to 90 % (II) naphthalene content was 108000 (I) - 96000 (II), while that of α -vinyl naphthalene copolymers was only 15000 (I) - 10000 (II). The mechanical strength of a β -copolymer with 40 % β -vinyl naphthalene is sufficient for practical application. The heat resistance of α - and β -copolymers linearly increases from 113 to 150°C on transition from polystyrene to polyvinyl naphthalene. The emulsion method is especially suited for the preparation of copolymers with 30 % β -vinyl naphthalene of optimum molecular weight and mechanical strength. I. A. Arbuzova is mentioned. There are 6 figures, 1 table, and 9 references: 5 Soviet-bloc and 4 non-Soviet-bloc. The 3 references to English-language publications read as follows: H. Mark, Chem. Eng. News, 27, 138 (1949); S. Loshaek,

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S/191/61/000/004/002/009
B110/B208

Synthesis and properties of...

E. Broderick, J. Polymer Sci., 39, 223 (1959); C. C. Price et al.
J. Polymer Sci., 11, 575 (1953).

Legend to Table: Properties of
polymers of α - and β -vinyl
naphthalenes. 1) Indices;
2) molecular weight; 3) degree
of polymerization; 4) specific
impact strength, $\text{kg}\cdot\text{cm}/\text{cm}^2$;
5) heat resistance according
to Vicat, $^{\circ}\text{C}$; 6) $\tan \delta$ at
 10^6 cps; 7) ϵ at 10^6 cps;
8) method of polymerization;
9) block method; 10) emulsion
method; 11) very brittle; 12)
note: the study was performed
with pressed samples.

① Показатели	② Способ полимеризации			
	③ блокный		④ эмульсионный	
	а	б	а	б
2 Молекулярный вес . . .	9000	66000	25000	115000
3 Степень полимеризации . . .	58	428	160	744
4 удельная ударная вяз- кость, $\text{кг}\cdot\text{см}/\text{см}^2$. . .	11	1,6	1	2,5
5 Теплостойкость по Вика, $^{\circ}\text{C}$	—	160,5	160	162
6 $\tan \delta$ при 10^6 герц . . .	—	$4-5 \cdot 10^{-4}$	$3 \cdot 10^{-4}$	$3-4 \cdot 10^{-4}$
7 ϵ при 10^6 герц . . .	—	2,6	—	2,6
12 Примечание. Испытания проводились на прессованных образцах.				

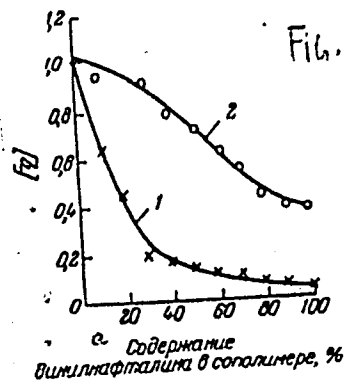
Card 4/8

Synthesis and properties of...

Legend to Fig. 1: Dependence of the intrinsic viscosity of block copolymers of α - and β -vinyl naphthalene with styrene on their composition.

- 1) copolymer with α -vinyl naphthalene;
- 2) copolymer with β -vinyl naphthalene;
- a) content of vinyl naphthalene in the copolymer, %.

S/191/61/000/004/002/009
B110/B208

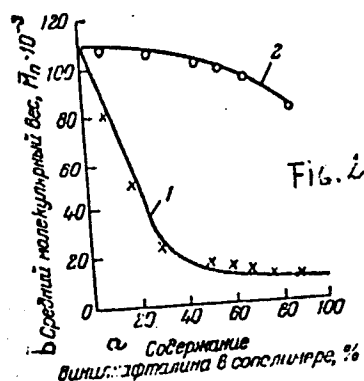


Card 5/8

Synthesis and properties of...

Legend to Fig. 2: Dependence of the molecular weight of block copolymers of α - and β -vinyl naphthalenes with styrene on their composition. Notations as in Fig. 1. a) Content of vinyl naphthalene in the copolymer, %; b) mean molecular weight, $M_n \cdot 10^{-3}$.

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Card 6/8

Synthesis and properties of...

Legend to Fig. 5: Dependence of the molecular weight of emulsion copolymers of α - and β -vinyl naphthalenes on their composition. Notations as in Fig. 1. a) Content of vinyl naphthalene in the copolymer, %; b) mean molecular weight, $M_n \cdot 10^{-3}$.

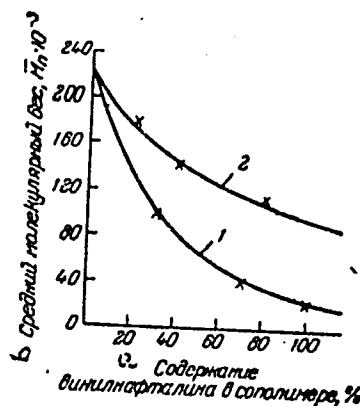
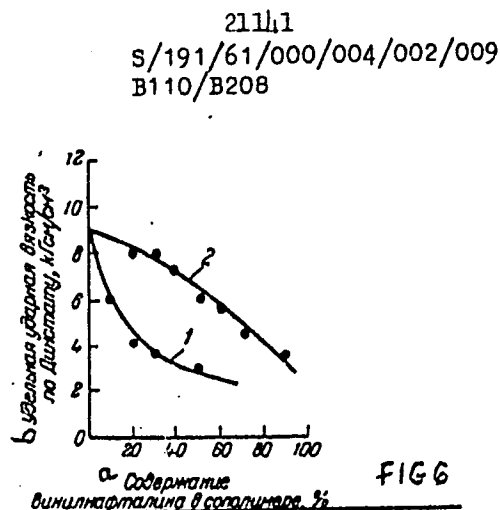


FIG 5

Card 7/8

Synthesis and properties of...

Legend to Fig. 6: Effect of emulsion copolymers of α - and β -vinyl naphthalenes with styrene on their specific impact strength. Notations as in Fig. 1. a) Content of vinyl naphthalene in the copolymer, %; b) specific impact strength, kg cm/cm³.



Card 8/8

USMANOVA, N.F.; GOLUBEVA, A.V.; VANSHEYDT, A.A.; SIVOGRAKOVA, K.A.;
DOYNIKOVA, S.N.

Synthesis and properties of polymers and copolymers of α - and
 β -vinyl naphthalenes. Report No.3: Copolymerization of β -vinyl-
naphthalene with styrene and plastics derived from them. Plast.
massy no.5:3-6 '61. (MIRA 14:4)
(Naphthalene) (Plastics)

GOLUBEVA, A.V.; KATSTOV, O.L. [deceased]; NEYMARK, O.M. [deceased];
BEZBORODKO, G.L.; KON, A.V.; USMANOVA, N.F.; DOYNIKOVA, S.N.

Synthesis and polymerization of styrene derivatives. Synthesis
of chloro derivatives of styrene. Plast.massy no.2:3-6 '63.
(MIRA 16:2)

(Styrene polymers)

(Chlorine compounds)

S/191/63/000/004/001/015
B101/B186

AUTHORS: Golubeva, A. V., Katstov, C. L. (Deceased), Bezborodko, G. L.,
Kon, A. V., Usmanova, N. F., Doynikova, S. N.

TITLE: Synthesis and polymerization of styrene derivatives. Polymers
of p-chlorostyrene and 2,5-dichlorostyrene

PERIODICAL: Plasticheskiy massy, no. 4, 1963, 4 - 6

TEXT: Mass polymers were produced from styrene, p-chlorostyrene, and 2,5-
dichlorostyrene under equal conditions. Their physico-mechanical and
dielectric properties were compared. Results:

	Poly-p-chloro- styrene	Poly-2,5-di- chlorostyrene	Polystyrene
average-number molecular weight	340.000	810.000	400.000
impact strength, kg/cm ²	14	6-9	18-20
bending strength, kg/cm ²	900	600	1100
Vicat heat resistance, °C	140-142	150	110
tanδ at 10 ⁶ cps	0.0004-0.0005	0.0002-0.0003	0.0002
breaking voltage kv/mm	25	28	20-22

Card 1/2

Synthesis and polymerization of...

S/191/63/000/004/001/015
B101/B186

Poly-2,5-dichlorostyrene was stable to a 7-day action of 96% H_2SO_4 , 34% HCl , 65% HNO_3 , 99% CH_3COOH at room temperature, whereas poly-p-chlorostyrene cracked at these concentrations. Both chlorine derivatives were stable to 60% H_3PO_4 , 85% $HCOOH$, 50% $NaOH$, oil, glycerol, and gasoline under the above conditions. Optimum conditions for molding, compression molding, and extruding polymers were studied. Poly-2,5-dichlorostyrene was molded at 180 - 190°C, 250 - 300 kg/cm², or at 260 - 265°C, 1200 - 1500 kg/cm². For poly-p-chlorostyrene, the temperature could be decreased to 175 - 180°C, and 250 - 260°C, respectively. Heat treatment of the pressed samples when kept in a thermostat at 90 - 100°C for several hours, is essential to eliminate cracks. Higher heat resistance makes chlorostyrene derivatives superior to styrene. Their mechanical strength, however, is lower than that of styrene. The only disadvantage of poly-2,5-dichlorostyrene is that HCl is liberated above 250°C. There are 4 figures and 2 tables.

Card 2/2

KIRILLOVA, E.I.; MATVEYEVA, Ye.N.; GLAGOLEVA, Yu.A.; FRATKINA, G.P.;
USMANOVA, N.F.

Aging of polystyrene plastics. Thermal stability of polystyrene polymers. Plast. massy no.11:3-6 '63. (MIRA 16:12)

ACCESSION NR: AP4012182

5/0191/64/000/002/0000/0008

AUTHOR: Usmanova, N. F.; Golubava, A. V.; Bulatova, V. M.;
Sivograkova, K. A.

TITLE: Styrene copolymer SAM

SOURCE: Plasticheskiye massy*, no. 2, 1964, 7-8

TOPIC TAGS: SAM styrene copolymer, physical mechanical property,
dielectric property, thermal stability, injection molding, compression
molding, styrene copolymer

ABSTRACT: A study of the physicomachanical properties of copolymer
SAM shows that this plastic, in comparison with styrene, has better
heat stability (by about 25°) and maintains the other physicomachani-
cal properties of styrene. Copolymer SAM has high dielectric proper-
ties over an extended time and temperature interval. It may be
processed by regular methods applicable to thermoplastics. The con-
ditions for injection molding, extruding, and compression molding
copolymer SAM are presented. "Investigation of the dielectric prop-
erties of the copolymer was conducted by Candidate of physical and

Card 1/2

ACCESSION NR: AP4012182

mathematical sciences, B. I. Sazhin, whom we thank." Orig. art.
has: 3 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 26Feb64

ENCL: 00

SUB CODE: MT

NO REF SOV: 000

OTHER: 000

Card 2/2

End

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